CLAIMS

What is claimed is:

1. A system for infusing a fluid in a living body, said system comprising:

a reservoir to transiently store a fluid infusate for transmission to a delivery site;

a flow restrictor disposed in a fluid path between said reservoir and said delivery site;

a pressure sensing device providing pressure information to determine a pressure differential across said flow restrictor; and

a valve disposed in said fluid path between said reservoir and said delivery site, said valve operable to control infusate output from said reservoir to said delivery site as a function of said pressure differential across said flow restrictor;

wherein said reservoir, said flow restrictor, said pressure sensing device, and said valve are provided in a configuration adapted for implantation in a living body.

2. The system of claim 1, further comprising:

an energy source to effect an expulsion of stored infusate from said reservoir.

3. The system of claim 2, wherein said energy source provides a non-constant reservoir pressure, and wherein said valve is controlled to provide a desired flow of said infusate despite said non-constant reservoir pressure.

4. The system of claim 3, further comprising:

a controller coupled to said pressure sensing device and said valve, said controller operable to utilize said pressure information to determine said pressure differential across said flow restrictor, said controller further operable to subdivide a flow period into smaller unit dose periods over which said pressure differential across said flow restrictor is likely to remain constant and controlling said valve to deliver a total dose of said infusate through a series of sequential said unit dose periods.

5. The system of claim 4, wherein said unit dose periods are selected at least in part to reduce battery consumption.

6. The system of claim 4, wherein said unit dose periods are selected so that an open/close rate of said valve is pharmacologically insignificant.

7. The system of claim 1, further comprising:

a controller coupled to said pressure sensing device and said valve, said controller operable to utilize said pressure information to determine said pressure differential across said flow restrictor, said controller further operable to manipulate said valve as a function of said pressure differential across said flow restrictor and thereby control infusate output from said variable-volume chamber to said delivery site.

8. The system of claim 7, wherein said controller provides an alert with respect to overfilling of said reservoir using said pressure differential across said flow restrictor.

9. The system of claim 7, wherein said controller provides an alert with respect to depletion of said reservoir using said pressure differential across said flow restrictor.

10. The system of claim 7, wherein said controller further determines a rate at which said pressure differential across said flow restrictor changes.

11. The system of claim 10, wherein said controller alters timing of a period of said valve being opened as a function of said rate at which said pressure differential across said flow restrictor changes.

12. The system of claim 1, wherein said pressure sensing device comprises:

a first pressure sensor disposed in said fluid path between said outlet conduit and said flow restrictor; and

a second pressure sensor disposed in said fluid path between said flow restrictor and said delivery site.

13. The system of claim 12, wherein said pressure sensing device further comprises:

a third pressure sensor disposed in said fluid path between said second pressure sensor and said delivery site.

14. The system of claim 1, further comprising:

a temperature sensing device providing temperature information to determine a temperature of said infusate.

15. The system of claim 14, wherein said valve is further operable to control infusate output from said reservoir as a function of said temperature of said infusate.

16. A method for infusing a fluid in a living body, said method comprising:

providing a reservoir, a flow restrictor, and a valve in a configuration adapted for implantation in a living body;

transiently storing a fluid infusate in said reservoir for transmission to a delivery site;

disposing said flow restrictor in a fluid path between said reservoir and said delivery site;

determining a pressure differential across said flow restrictor; and

controlling said valve disposed in said fluid path between said reservoir and said delivery site to control infusate output from said reservoir to said delivery site as a function of said pressure differential across said flow restrictor.

17. The method of claim 16, wherein controlling said valve comprises:

subdividing a flow period into smaller unit dose periods over which said pressure differential across said flow restrictor is likely to remain constant and controlling said valve to deliver a total dose of said infusate through a series of sequential said unit dose periods.

18. The method of claim 17, wherein said unit dose periods are selected at least in part to reduce battery consumption.

19. The method of claim 17, wherein said unit dose periods are selected so that an open/close rate of said valve is pharmacologically insignificant.

20. The method of claim 16, further comprising:

providing an alert with respect to overfilling of said reservoir using said pressure differential across said flow restrictor.

21. The method of claim 16, further comprising:

providing an alert with respect to depletion of said reservoir using said pressure differential across said flow restrictor.

22. The method of claim 16, further comprising:

determining a rate at which said pressure differential across said flow restrictor changes.

23. The method of claim 22, wherein controlling said valve comprises:

altering timing of a period of said valve being opened as a function of said rate at which said pressure differential across said flow restrictor changes.

24. The method of claim 16, further comprising:

determining a temperature of said infusate, wherein controlling said valve comprises controlling infusate output from said reservoir as a function of said temperature of said infusate.

25. A system for infusing a fluid in a living body, said system comprising:

a variable-volume chamber to receive and transiently store a fluid infusate;

an energy source to effect an expulsion of stored infusate from said variable-volume chamber;

an outlet conduit in fluid communication with said variable-volume chamber, said outlet conduit to facilitate the passage of infusate from said variable-volume chamber to a delivery site;

a flow restrictor disposed in a fluid path between said outlet conduit and said delivery site;

a pressure sensing device providing pressure information to determine a pressure differential across said flow restrictor; and

a valve disposed in said fluid path between said outlet conduit and said delivery site, said valve operable to control infusate output from said variable-volume chamber via said outlet conduit to said delivery site as a function of said pressure differential across said flow restrictor;

wherein said variable-volume chamber, said energy source, said outlet conduit, said flow restrictor, said pressure sensing device, and said valve are provided in a configuration adapted for implantation in a living body.

26. The system of claim 25, wherein said energy source provides a non-constant reservoir pressure over at least a portion of a flow cycle of said system.

27. The system of claim 25, wherein said valve is disposed in said fluid path between said flow restrictor and said delivery site.

28. The system of claim 25, further comprising:

a controller coupled to said pressure sensing device and said valve, said controller operable to utilize said pressure information to determine said pressure differential across said flow restrictor, said controller further operable to manipulate said valve as a function of said pressure differential across said flow restrictor and thereby control infusate output from said variable-volume chamber to said delivery site.

29. The system of claim 28, wherein said controller further determines a rate at which said pressure differential across said flow restrictor changes.

30. The system of claim 29, wherein said controller alters timing of a period of said valve being opened as a function of said rate at which said pressure differential across said flow restrictor changes.

31. The system of claim 25, wherein said pressure sensing device comprises:

a first pressure sensor disposed in said fluid path between said outlet conduit and said flow restrictor; and

a second pressure sensor disposed in said fluid path between said flow restrictor and said delivery site.

32. The system of claim 31, wherein said pressure sensing device further comprises:

a third pressure sensor disposed in said fluid path between said second pressure sensor and said delivery site.

33. The system of claim 25, further comprising:

a temperature sensing device providing temperature information to determine a temperature of said infusate.

34. The system of claim 33, wherein said valve is further operable to control infusate output from said variable-volume chamber as a function of said temperature of said infusat